No.	Commentator	Section	Comment Issue	Comment	Response	Lead Responder
Appendix B1 - Human Health PRG Derivation						
B1-1	DEQ	Appendix B1 Section 1.0	Surface Water and Groundwater PRGs	Need to include explanation of the development of PRGs for surface water and groundwater.	Since these values were not developed as site-specific values, but are rather from reference values, there is no need to discuss the development of the values. The text of Section 2 adequately describes the source of these values.	Allen
B1-2	Five Tribes	Appendix B1 Section 1.0 First paragraph	Editorial	I think this needs a little more introductory information. This text is a suggestion. Use this or modify if not strictly accurate. "Risk-based PRGs were calculated for all contaminants that posed an excess lifetime cancer risk greater than 1 x 10^{-6} or a hazard quotient greater than 1 in the final Portland Harbor Baseline Human Health Risk Assessment (Kennedy-Jenks 2013) assuming reasonable maximum exposure. For cancer effects, risk-based PRGs were calculated as the concentration consistent with a specified target excess cancer risk (TR) of 1 x 10^{-6}. For non-cancer effects, the risk-based PRGs were the calculated concentration that would result in a specified target hazard quotient (THQ) of 1. In the case of both cancer and non-cancer effects, the PRGs are calculated based on specified exposure pathways and receptors."	The suggested text will be incorporated.	Allen
B1-3	Five Tribes	Appendix B1 Section 1.1 Tissue PRGs	Shellfish Tissue PRGs	The title, "Risk-Based PRGs for Fish/Shellfish Tissue" refers to shellfish, but the following text seems to exclusively deal with fish. Please add text to explain why shellfish were not considered to be an exposure pathway (if that is in fact the case).	The purpose of this section is to show how risk-based PRGs in tissue are calculated, which is independent of species. Its purpose is not to provide a discussion on why certain exposure pathways are complete or incomplete. Such information is presented in the final BHHRA, which must be used in conjunction with the information presented in this appendix.	Allen
B1-4	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Editorial	Any subsequent discussions of this document would be facilitated by numbering the equations. I suggest that be done.	As most of the equations are independent, we don't see the merit of numbering them.	Allen
B1-5	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Editorial	This comment refers to the first formula (non-cancer effects) shown in Section 1.1.1 on page 1. The use of CR with no subscript in the first formula can be confusing. It's defined in Table 2 as maternal consumption rate of fish. Perhaps you need to add a subscript. Also, there is no AT value specified in Table 2 for non-cancer effects.	The suggested subscript will be included, as well as a definition in Table 2 that defines the averaging time for non-cancer effects as ED x 365 days/yr.	Allen
B1-6	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Editorial	This comment refers to the first formula (non-cancer effects) shown in Section 1.1.1 on page 1. It is suggested the notation be changed for BW, ED, and CR to account for age, where age can have values of "a" or "c" (e.g., BW_{age}, ED_{age}, CR_{age}). Otherwise you're left with generic terms like BW, ED, and CR to which there is no numeric value in Table 2. This modification, if adopted, would need to be introduced throughout the Appendix.	Concur	Allen

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B1-7	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Editorial	This comment refers to the second formula (carcinogenic effects) shown in Section 1.1.1 on page 1. I presume the "nc" subscript on AT refers to non-cancer. Since this is a PRG for carcinogenic effects is this an error? The value of AT_nc is not specified in Table 2.	Concur	Allen
B1-8	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Child and Adult Exposure	This comment refers to the combined child and adult exposure equation on page 2. It is not clear to me when the adjusted CR value would be used versus the child- or adult-related values. This part needs some additional explanatory text. Also, the introductory sentence indicates that the "exposure was evaluated." That's incorrect. It's the PRG value that's being evaluated.	We believe the discussion is adequately clear that age-adjusted consumption rates apply only to the combined exposure, and that the text is referring to exposure and not PRGs	Allen
B1-9	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Editorial	This comment refers to the combined child and adult exposure equation on page 2. No definition is provided for CR_{adj}. I presume that it is the same as $CR_{f\text{-}adj}$. If so, change in equation or list of defined terms to make consistent.	Concur	Allen
B1-10	Five Tribes	Appendix B1 Section 1.1.1 Tissue PRGs	Reference Doses	This comment refers to the last paragraph of Section 1.1.1. Reference doses are not included in Table 2. Need some explanation of what they are and where the values used in the PRG calculations can be found. "The exposure assumptions used to estimate exposure from fish and shellfish consumption are presented in Table 2. Reference doses are…. The value of the reference doses used in the risk-based PRG calculations are contained in Table xxx of xxxxx."	Reference doses are provided in Table 3. However, as noted above, a discussion of the derivation of reference doses and cancer slope factors is presented in Section 4 of the BHHRA and will not be repeated here	Allen
B1-11	DEQ	Appendix B1 Section 1.1.2 Tissue PRGs	Infant Exposure	In addition to steady-state conditions, the other difference from the risk assessment is an assumption of no chemical loss during lactation. Also, the risk assessment used a subchronic dioxin toxicity value (intermediate MRL from ATSDR) for infant exposure, while the PRG calculation approach for dioxins uses the same chronic toxicity values for both adults and infants.	PRGs are calculated using toxicity criteria that have been updated since the BHHRA was finalized, and the intermediate MRL is no longer supported by the current science regarding dioxins	Allen
B1-12	Five Tribes	Appendix B1 Section 1.1.2 Tissue PRGs	Editorial	The first sentence in this section is not clear. Make sure that suggested changes are correct. "Risk-based PRGs in fish and shellfish tissue were calculated using the following equation adapted from Section 3.5.6 of the Final Portland Harbor BHHRA. ~~and~~ The equation presumes ~~using~~ a steady-state model of maternal fish consumption that assumes that maternal intake occurs..."	While we're fine with the suggested edit, proper grammatical construction suggests that we then delete the second "maternal."	Allen
B1-13	Five Tribes	Appendix B1 Section 1.1.2 Tissue PRGs	Editorial	This comment is made with respect to the definitions provided after the equation in Section 1.1.2. Make sure that the definitions are consistent with what is shown on Table 2. For example, for the definition of "AE" add "oral absorption efficiency of the chemical (unitless)." I added units to AE, please check that this is correct. What does "BS" mean in the definition of "h". Is the CR shown in the definition the same as CR_{fish} shown in the equation? Please modify notation as necessary to make consistent. The units for EF_a can't be correct since this is the only parameter defined with	Absorption efficiency has no units, units are only provided for those values that have units. "BS" will be deleted, we've no idea where it came from. The units for EF_a are correct. The value for AT_m is 50 years, representing cumulative exposure from birth through typical child-bearing age.	Allen

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				a time-scale of years and the result is a mass concentration. My guess would be that the exposure duration must be in years. Please confirm that calculations were carried out correctly. Please check that the correct units are shown for ED_a based on this comment. No value given for AT_m in Table 2.		
B1-14	DEQ and Five Tribes	Appendix B1 Section 1.1.3 Ingestion PRGs	Editorial	In the first calculation, $Conc_{sed}$ should be labeled PRG_{sed}. It may be helpful to distinguish the PRG_{sed} values for noncancer and cancer effects.	Concur	Allen
B1-15	DEQ	Appendix B1 Section 1.1.3 Ingestion PRGs	Editorial	It may be helpful to identify the potency adjustments by the term ad-dependent adjustment factors (ADAFs).	The potency adjustments are described Section 3.5.7 of the BHHRA, and a reference to that section will be provided	Allen
B1-16	Five Tribes	Appendix B1 Section 1.1.3 Ingestion PRGs	AT Value	As mentioned above, there is no AT value specified for non-cancer effects in Table 2.	See response above	Allen
B1-17	Five Tribes	Appendix B1 Section 1.1.3 Ingestion PRGs	AT Value	Is there some reason the AT in the carcinogenic effects equation doesn't have a "c" subscript on it similar to the AT term in the next equation (equation for exposure assumed to occur from childhood through adult years)? The AT_c term is not defined in the list of parameters. Need to explain why ATc is used in the third equation in this section and AT is used in the prior equations.	The term should be AT_c.	Allen
B1-18	Five Tribes	Appendix B1 Section 1.1.3 Ingestion PRGs	Editorial	Based on my check of the definition of PRG_{sed}, the parameter dimensions must be mg/kg not ug/kg.	The text will be revised to clarify units conversion such that inorganics are expressed in units of mg/kg, while organic COCs are µg/kg	Allen
B1-19	Five Tribes	Appendix B1 Section 1.1.3 Ingestion PRGs	Editorial	The meaning of the term mg-yr/kg-day in the definition of $ISIFM_{adj}$ in the last equation of this section is not clear. Also, this value is not in Table 2. I also was unable to find where within the BHHRA the values were noted or a discussion as to how they were obtained.	It's not a definition, the derivation of $IFISM_{adj}$ is presented in the last equation, and the units are mg-yr/kg-day as presented.	Allen
B1-20	Five Tribes	Appendix B1 Section 1.1.3 Ingestion PRGs	Infant Exposure	Should there be an infant body weight as well for ages 0 to 2 for the last equation in this section?	No, BW_c is correct for this age range	Allen
B1-21	Five Tribes	Appendix B1 Section 1.1.4 Dermal Contact	AT Value	Same comment as above for the first equation in this section on the use of "AT" for non-cancer effect and notation that neglects subscript indicating age on BW, SA, ED, and AF.	Concur	Allen
B1-22	Five Tribes	Appendix B1 Section 1.1.4 Dermal Contact	Editorial	The definition of PRG_{sed} in the third equation of this section indicates units of "ug/kg or mg/kg." It can't be both since units on the remainder of the terms are specified? Please check units and resolve inconsistency.	As noted above, PRGs are in units of mg/kg for inorganic COCs and µg/kg for organic COCs, and the test needs to be revised to clarify both units conversions	Allen

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B1-23	Five Tribes	Appendix B1 Section 1.1.4 Dermal Contact	Editorial	There is inconsistent notation used in the equations of this section. Should the "dermal" subscript be added to all "ABS" parameters in the equations or should it be removed from all or some locations. I notice that ABS and ABS_{dermal} are listed separately in Table 2. Also what are the units for ABS_{dermal}? Is it unitless? If so, this information should be added.	We concur that a distinction should be made between oral and dermal absorption efficiencies. Such values are unitless. Units are as presented, inputs with no units ascribed to them have none.	Allen
B1-24	Five Tribes	Appendix B1 Section 1.1.4 Dermal Contact	Total Risk-Based PRG Equation	There should be some text to explain the rationale for using the last equation shown in the section to calculate a "total risk-based PRG" in sediment. If this is a standard EPA approach then provide an appropriate reference. The concentration terms in this equation are not defined. Should these be "PRG" values rather than "Conc"? If the equations were numbered then you could refer back to specific equations in identify the two $Conc_{sed}$ terms.	The equation simply calculates a cumulative weighted exposure via ingestion and dermal exposure, as shown in the equation.	Allen
B1-25	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	Provide the reference that describes the original analysis for the following statement: "The whole-body/fillet concentration ratios were calculated using the measured mean whole body and fillet concentrations of each COC on a river mile or fishing zone basis, and are presented in Table 4."	This appendix is the reference.	Allen
B1-26	DEQ	Appendix B1 Section 1.1.5 Consumption PRGs	Organic Carbon	Organic carbon content in sediment can vary considerably throughout the site. There may be more consistency in organic carbon content in areas where cPAHs are present. It may be more appropriate to use an organic carbon content consistent with these areas, rather than use a site-wide average value.	Is DEQ suggesting that PRGs be calculated based on varying organic carbon content of a specific location or area? If so, it would be helpful to understand how DEQ proposes to define such areas.	Allen
B1-27	DEQ	Appendix B1 Section 1.1.5 Consumption PRGs	Organic Carbon	The uncertainty associated with developing a cPAH sediment PRG using the OC normalized BSAR approach should be acknowledged. Add language "This approach attempts to derive a mean dry-weight sediment concentration based on a mean wet-weight clam tissue concentration, mean lipid content in clams, and mean fraction organic carbon in sediment. The approach is an approximation, and will best match results using organic-carbon normalization when there is not wide variation in both clam lipid content (a reasonable assumption), and site sediment organic carbon content (which is known to vary throughout the site)."	We disagree that the uncertainty associated with this approach is any greater than the overall approximations used for any of the PRG calculations, including those developed using the food-web model. Thus, we don't think that this warrants any special discussion.	Allen
B1-28	DEQ	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	PRG_{sed} should be identified as being dry weight (ug/kg). f_{oc} is dry weight, and f_{lipid} is wet weight.	Concur	Allen
B1-29	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	For the last equation and definitions in the cPAH subsection, there should be references for the values shown for f_{oc} and f_{lipid}. Not clear why you've chosen to indicate these values among the many parameter values that remain unspecified.	The source of the cited values is the RI. We are unclear what other values the reviewer believes are unspecified.	Allen

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B1-30	DEQ	Appendix B1 Section 1.1.5 Consumption PRGs	Organic Carbon	Hexachlorobenzene Subsection: Given that BSAF is usually defined using corrections for carbon content, it may be more helpful to present the definition of BSAF: BSAF = (C_{tissue} / f_{lipid}) / (C_{sed} / f_{oc}) And then show the calculation for C_{sed}.	BSAFs may or may not be lipid-and OC-normalized. If so, the final equation becomes as shown in this section. Please note that the appendix is not intended to reiterate concepts and discussions that have been presented in various Portland Harbor technical reports. Rather, the appendix utilizes that information and is intended to show only the calculations.	Allen
B1-31	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	The original language of the first sentence for the Hexachlorobenzene subsection was grammatically incorrect and difficult to read. Proposed revision below. Please check that the original meaning was not changed. "~~Sediment-tissue BSAFs for hexachlorobenzene were developed for large home-range species, no relationship was established for smallmouth bass (Windward, 2009).~~ Sediment-tissue BSAFs for hexachlorobenzene were developed by Windward (2009) for large home-range species. No relationship between sediment and tissue concentrations was established for smallmouth bass. The general relationship between sediment..."	BSAFs are by definition a relationship between chemical concentrations between biota and sediment. As such, the sentence is correct.	Allen
B1-32	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	Should the parameter C_{tissue} in the first equation in the Hexachlorobenzene subsection be PRG_{tissue}? If so, then modify equation and add clarifying sentence after the equation stating the following: "The calculation of PRG_{tissue} is described in Sections 1.1.1 and 1.1.2 of this Appendix."	No, it was meant to be C_{tissue}	Allen
B1-33	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	Comment is made with respect to the definition of f_{lipid} after the first equation in the Hexachlorobenzene subsection. If the fish lipid content is given in percent and the sediment organic carbon content is expressed as a fraction then it would seem that units have been mixed incorrectly. Please check the definition and check calculations if this is found to be necessary.	Since neither lipid content nor OC content have associated units, it isn't clear why the reviewer believes their inclusion modifies the units of µg/kg from the numerator	Allen
B1-34	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	The table shown in the Hexachlorobenzene subsection needs a table number and reference describing the source of information.	We're fine with no table number, as the information could just have easily be presented as text. The reference, already provided in the text, is Windward 2009.	Allen
B1-35	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Total Risk-Based PRG Equation	Should the "Conc" terms in the last equation in the Hexachlorobenzene section be referred to as "PRG"? As noted above, there should be an explanation for combining the individual PRG values using this approach.		Allen
B1-36	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Food Web Model	With respect to the Food Web Model subsection, is there a simple way of summarizing the results of the Food-Web model? Would the output be in a form similar to the BASF and BASR terms? If so could these go in a table? This would go a long way towards improving the transparency of the procedure as readers could do calculations of PRGs themselves and compare to the reported values.	The food web model is described in a separate appendix	Allen

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B1-37	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	The first sentence in the Food Web Model subsection is unclear. Recommend the following revisions: "The Arnot and Gobas food-web model (Windward, 2009) was refined for Portland Harbor~~, and~~. The model accounts for uptake of contaminants…"	The sentence as written is fine.	Allen
B1-38	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	The first sentence of the second paragraph under the Food Web Model subsection is unclear. Proposed revision below. Please check that this is correct and include reference. "The calculated whole fish body ~~concentrations~~ PRG values were converted to fillet ~~concentrations~~ PRGs using ~~the~~ measured (insert reference here) ratios of whole-body contaminant concentration to fillet contaminant concentration~~/ fillet ratios~~ as presented in Table 4."	The sentence as written was fine.	Allen
B1-39	Five Tribes	Appendix B1 Section 1.1.5 Consumption PRGs	Editorial	For the second sentence in the second paragraph of the Food Web Model subsection, maybe you should list the four fish species that were evaluated. It's difficult to determine based on the discussion.	It isn't clear why the reviewer needs to know that information by the end of the second sentence, as it is currently provided in the third and fourth sentences.	Allen
B1-40	Five Tribes	Appendix B1 Table 2 Specific Exposure Values	Editorial	With respect to the ABS parameter, are the units specified here correct?	Nope, should be unitless	Allen
B1-41	Five Tribes	Appendix B1 Table 2 Specific Exposure Values	Editorial	No value is specified for maternal exposure averaging time (AT_m).	See response to same comment above	Allen
B1-42	Five Tribes	Appendix B1 Table 2 Specific Exposure Values	Editorial	No value specified for maternal body weight (BW_a).	The term will be revised as BW_m, and with a value of 61 kg based on the weighted average of mean female body weights from age 0 to 50	Allen
B1-43	Five Tribes	Appendix B1 Table 2 Specific Exposure Values	Editorial	Reference dose (RfD) does not belong in table since it is chemical-specific.	We will consider whether this table should include a reference to Table 3 for CSFs and RfDs, or whether it should just be deleted as suggested	Allen
B1-44	Five Tribes	Appendix B1 Table 3 Chemical-Specific Values	Editorial	What are the units for ABS?	Percent	Allen